US Army Corps of Engineers

Asset Management

Infrastructure Risk and Reliability

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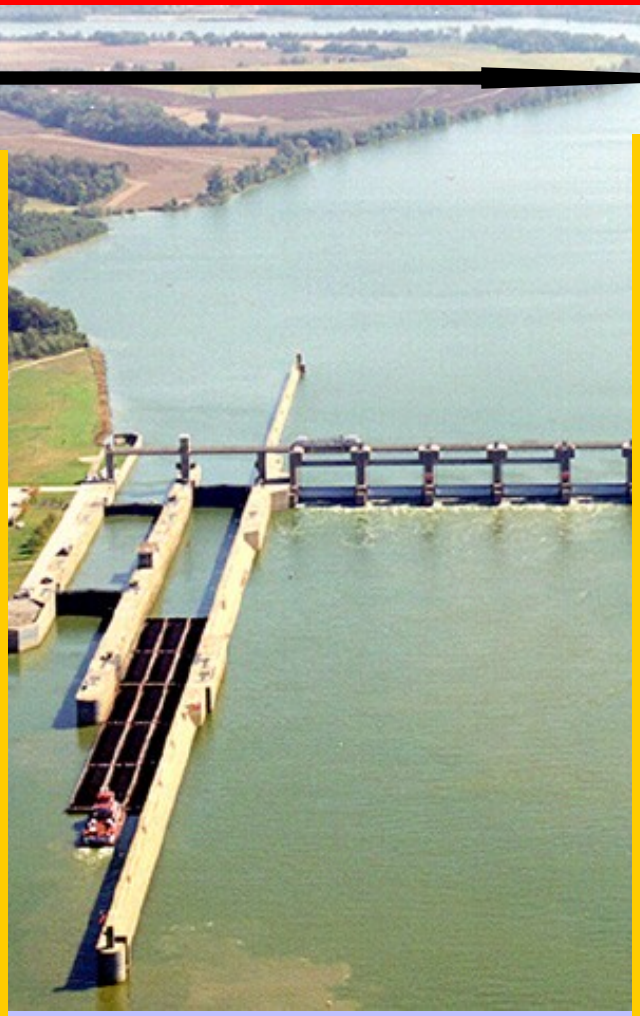
Why Asset Management?

WE OWN IT → **WE MANAGE IT**



"Short list"
43,000 Structures
285000 Tracts of land
12000 Buildings

Includes:
1000 Coastal Structures
600 Dams
2500 Recreational Areas
250 Locks

Lifecycle Infrastructure Management:
Campaign Goal 3c- The Right Business Practices

Executive order 13327- Right-sizing inventory

Budget Performance Integration-

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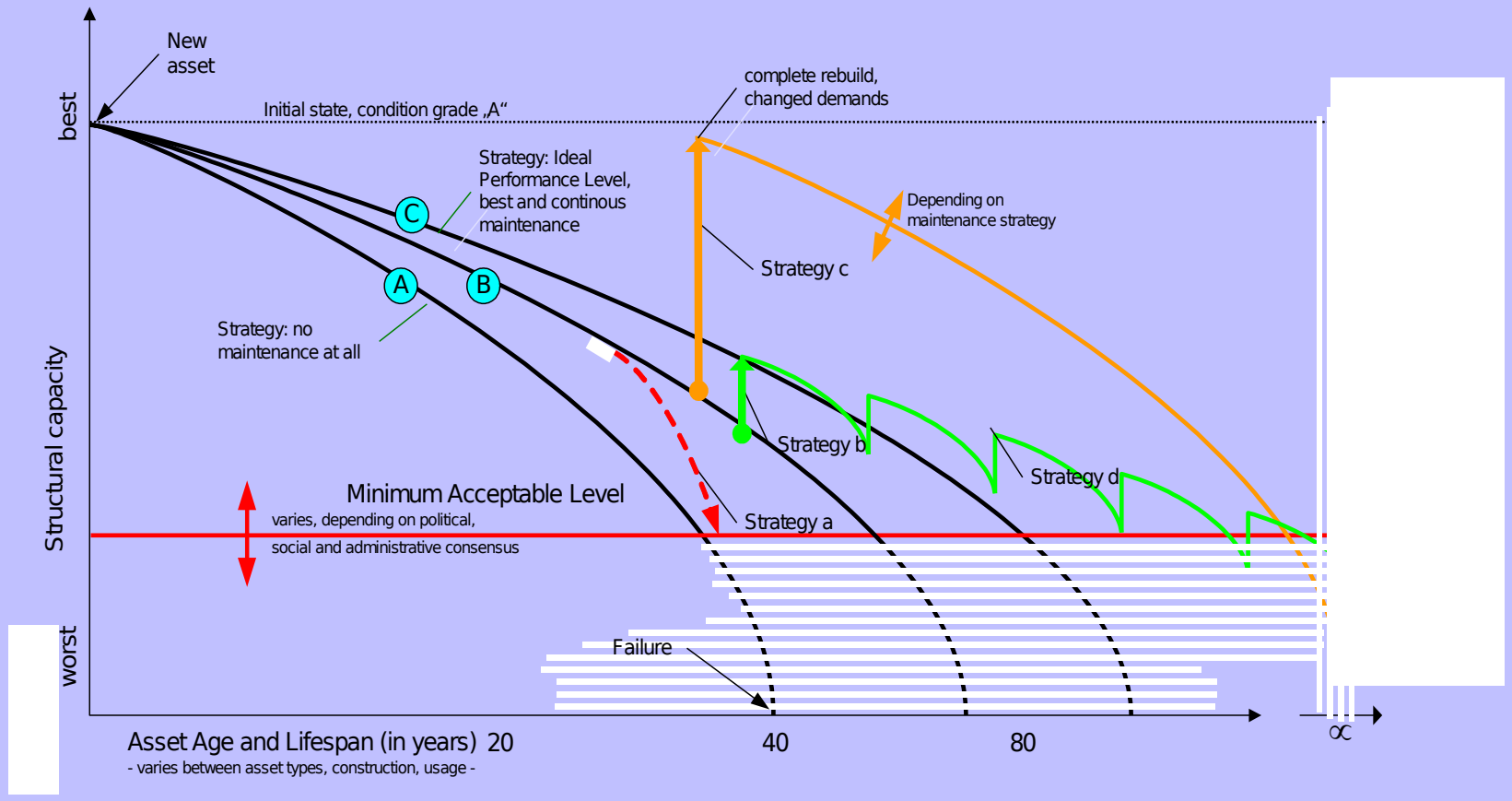
What is Asset Management?



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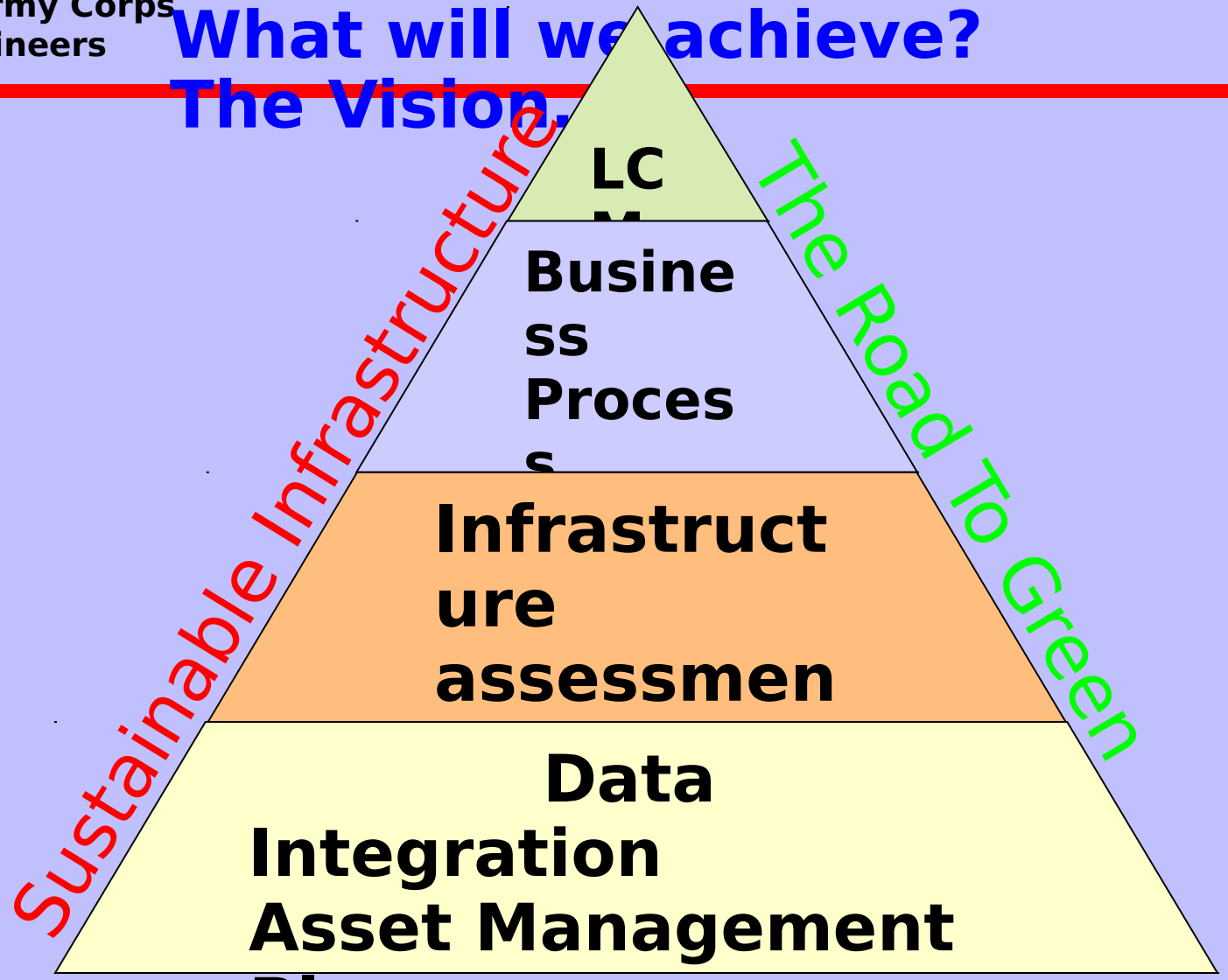
What will we achieve? The Vision.



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Data Integration

ISSUES

- Fundamental to success (Lean Six Sigma)
- Multiple sources (function, business line, program)
- Costly (especially when paid for multiple times)
- Must be collaborated
- Must have enterprise approach
- Must move to geospatial format

APPROACH

- REMIS- Real Estate Management System
- Research (review of all “inventory” data bases)
- Set Requirements (business line, programs, OMB, DO
- Identify Funding Sources
- Develop communication plan (HQ champion and PM’s

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Infrastructure Assessment and Evaluation

COMPONENTS

- **Standards and Criteria**
- **Condition Assessment**
- **Risk and Reliability analysis/models**
- **Inspection and Monitoring**

ISSUES

- **Most complex piece of strategy**
- **Will be broad in scope (simple to complex)**
- **Will be tailored to business line issues**
- **Will involve many players with diverse approaches**

APPROACH

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The Business Model

COMPONENTS
- 5-yr perspective plan
- Performance Metrics
- Customer/stakeholder expectations
- Decision support process/tools (top down)
- Watershed and System-scale
- National plan

ISSUES
- Mandated by Executive office
- Critical to success of Corps Strategic plan
- Will vary according to customer and business line

APPROACH
- Driven by business line teams
- Executed by RBC’s
- Continue top-down evaluation (LRD example)

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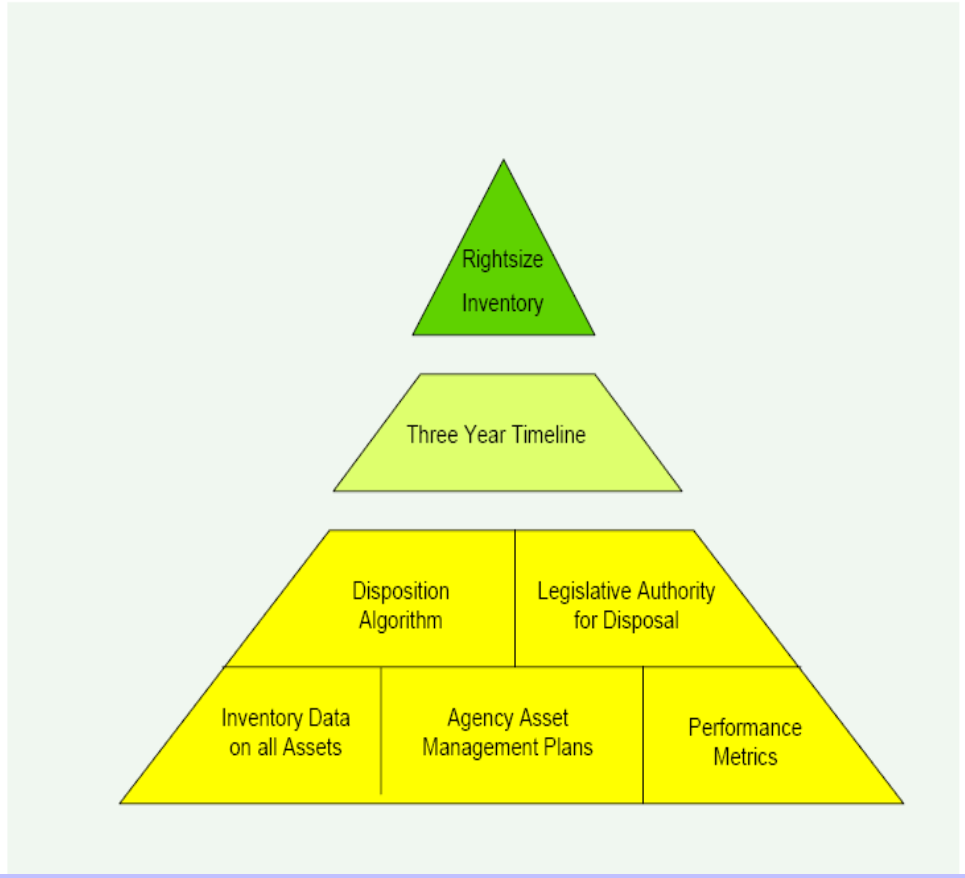
What are drivers?

The Real Property initiative can be thought of as a layered pyramid, where each successful layer builds upon the developed tools and measures to create a rightsized Federal inventory.



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What are EO metrics?

1) **Utilization**: Currently only applies to buildings (ratio of occupancy to design capacity)

2) **Facility Condition Index**: (1- $repair/PRV) x 100

Plant Replacement Value: The cost of replacing the asset at today's standards

Repair Needs: $ needed to restore asset to a condition substantially equivalent to originally intended capacity, efficiency, or capability

3) **Mission Dependency**: Critical, Dependent, Non-dependent

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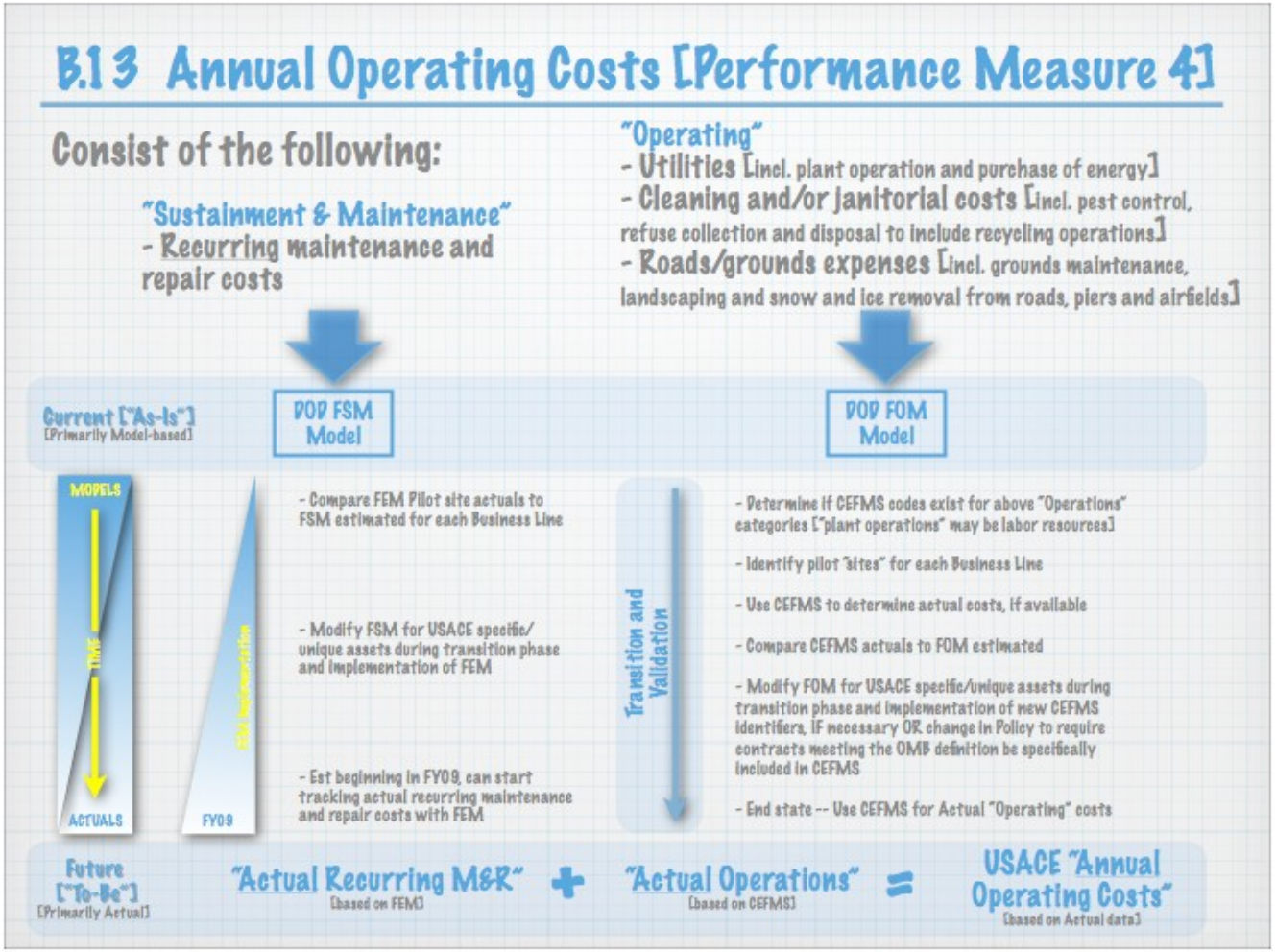
Getting the Metrics right


B.13 Annual Operating Costs [Performance Measure 41]
Consist of the following:
"Sustainment & Maintenance"
- Recurring maintenance and repair costs
"Operating"
- Utilities [incl. plant operation and purchase of energy]
- Cleaning and/or janitorial costs [incl. pest control, refuse collection and disposal to include recycling operations]
- Roads/grounds expenses [incl. grounds maintenance, landscaping and snow and ice removal from roads, piers and airfields]
Current ["As-Is"]
[Primarily Model-based]
POD FSM Model
POD FOM Model
MODELS
TIME
ACTUALS
FEM Implementation
FY09
- Compare FEM Pilot site actuals to FSM estimated for each Business Line
- Modify FSM for USACE specific/ unique assets during transition phase and implementation of FEM
- Est beginning in FY09, can start tracking actual recurring maintenance and repair costs with FEM
Transition and Validation
- Determine if CEFMS codes exist for above "Operations" categories ["plant operations" may be labor resources]
- Identify pilot "sites" for each Business Line
- Use CEFMS to determine actual costs, if available
- Compare CEFMS actuals to FOM estimated
- Modify FOM for USACE specific/unique assets during transition phase and implementation of new CEFMS identifiers, IF necessary OR change in Policy to require contracts meeting the OMB definition be specifically included in CEFMS
- End state -- Use CEFMS for Actual "Operating" costs
Future ["To-Be"]
[Primarily Actual]
"Actual Recurring M&R"
[based on FEM]
+
"Actual Operations"
[based on CEFMS]
=
USACE "Annual Operating Costs"
[based on Actual data]

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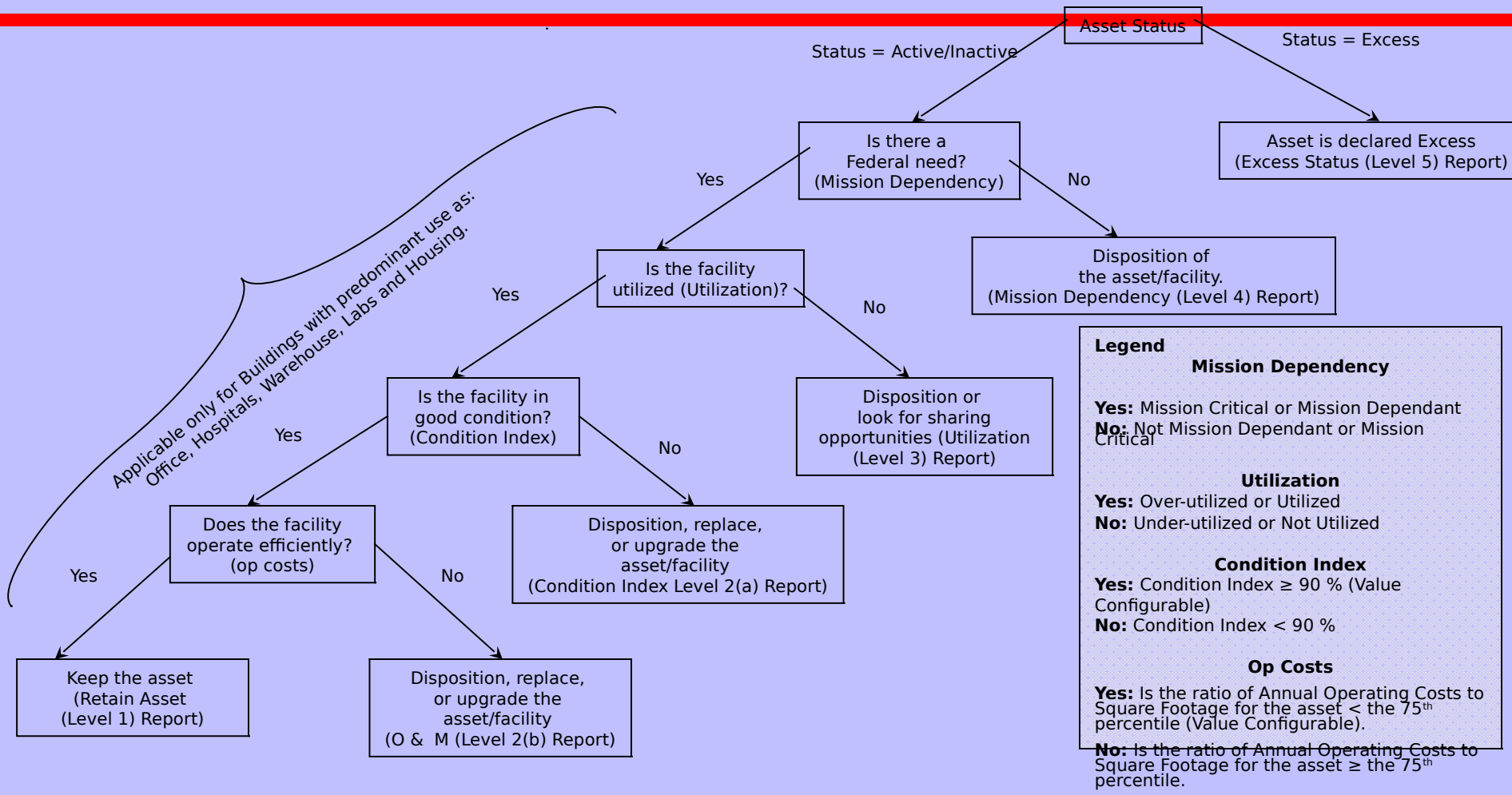
Disposition Decision Tree


Asset Status
Status = Active/Inactive
Status = Excess
Is there a Federal need? (Mission Dependency)
Asset is declared Excess (Excess Status (Level 5) Report)
Yes
No
Is the facility utilized (Utilization)?
Disposition of the asset/facility. (Mission Dependency (Level 4) Report)
Yes
No
Is the facility in good condition? (Condition Index)
Disposition or look for sharing opportunities (Utilization (Level 3) Report)
Yes
No
Does the facility operate efficiently? (op costs)
Disposition, replace, or upgrade the asset/facility (Condition Index Level 2(a) Report)
Yes
No
Keep the asset (Retain Asset (Level 1) Report)
Disposition, replace, or upgrade the asset/facility (O & M (Level 2(b) Report)
Applicable only for Buildings with predominant use as: Office, Hospitals, Warehouse, Labs and Housing.

Legend

Mission Dependency

Yes: Mission Critical or Mission Dependant
No: Not Mission Dependant or Mission Critical

Utilization

Yes: Over-utilized or Utilized
No: Under-utilized or Not Utilized

Condition Index

Yes: Condition Index ≥ 90 % (Value Configurable)
No: Condition Index < 90 %

Op Costs

Yes: Is the ratio of Annual Operating Costs to Square Footage for the asset < the 75th percentile (Value Configurable).

No: Is the ratio of Annual Operating Costs to Square Footage for the asset ≥ the 75th percentile.

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Campaign Goal 3: Enhance Life-cycle Infrastructure Management

3a – Reinvent MILCON and Real Estate processes to meet DoD transformation needs

3b – Reduce security risks to critical military and civil infrastructure

3c – Improve the reliability of water resources infrastructure using a risk-based asset management strategy

3d - Provide innovative solutions to civil and military infrastructure problems

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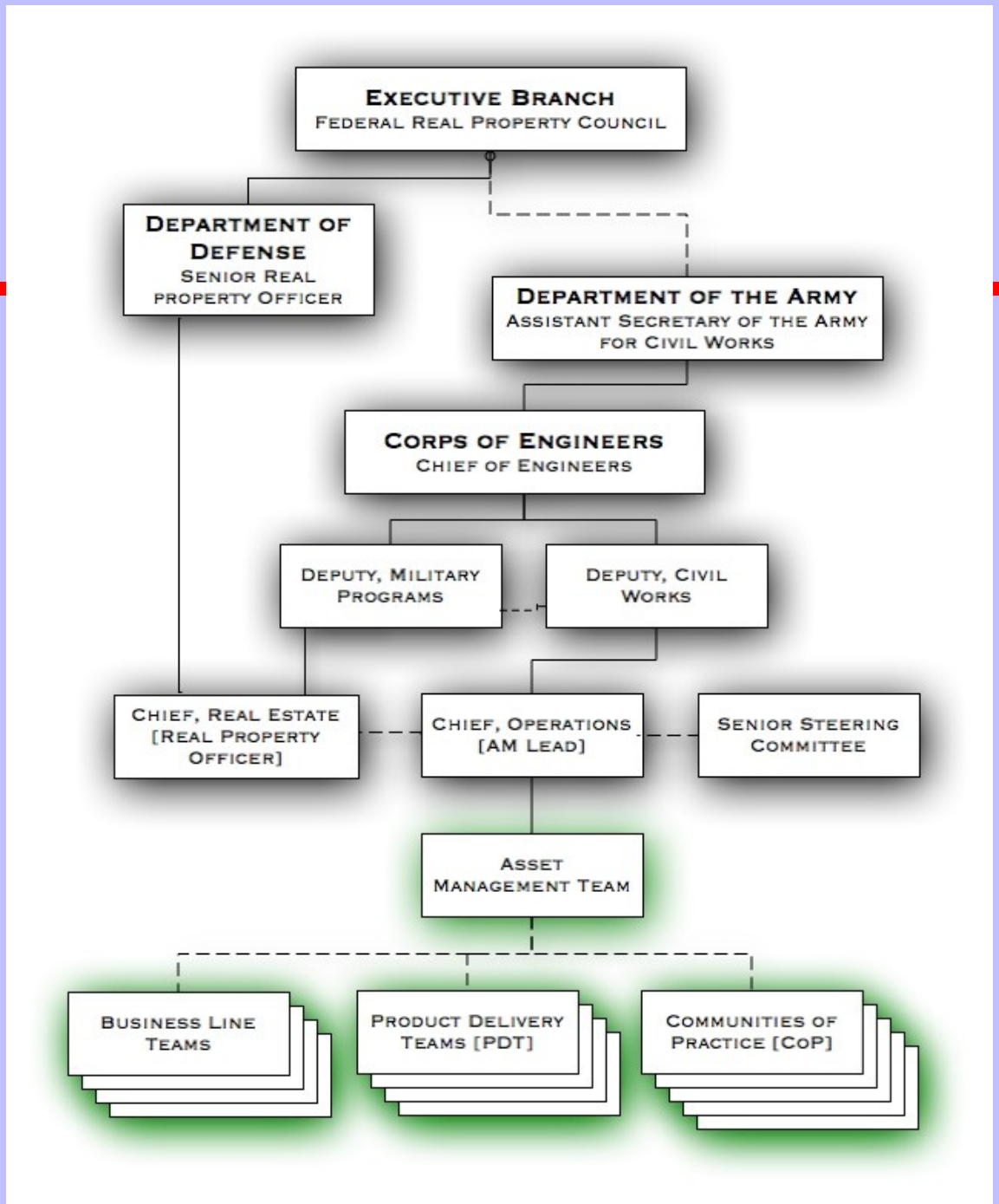
Who is executing for Corps?



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Who are they?

Steering Committee

Lead: Barnes
Members: Loew, Basham, Hecker, Waters, Calcara, Tornblom, Berwick, Martin, White

Business Team Leads

Navigation, Flood, Recreation, Hydropower, Environmental, Emergency, Water Supply
Lead: Knight
HQ and MSC rep

AM PDT Central

Lead: Reilly (FOA)
Ellsworth (CERL)
Ercums (HQ-RE)
Glenn (SAM)
Jones (HQ-RE)

HQ Champions/Portfolio Leads

Data Integration (Blyer)
Risk and Reliability (Halpin)
Security (Heidi)
O&M (Verna)
Emergency (Jensen)
R&D (Syriopoulou)
Real Estate (Kuhn)
Resource Management
Logistics Management
Corporate Information
Campaign Plan Goal 3 (Packing)
BIM (Banks)

Advisory Team

Internal (District/Division)
External (BOR, NPS, Navy, Academia, CMTS, stakeholders, partners, etc.)

Task PDTs

Data Integration (IWR, ITL,AM Central)
Executive Order (AM Central)
Campaign Plan (AM Central)
OMBIL (Lichey/Pankow)
REMIS (Glenn)
FEM/MAXIMO (Krahenbuhl)
DSPRA (Halpin, Niles)
CISP (Seda-Sanabria)
RECBEST (Jackson)
National Levee Program (Durrett)
ORNIM (Schaaf)
IPET (Pope)
CMTS (Grier)
JCW (Pommer, Hannon)
R&D Program (Sharp,

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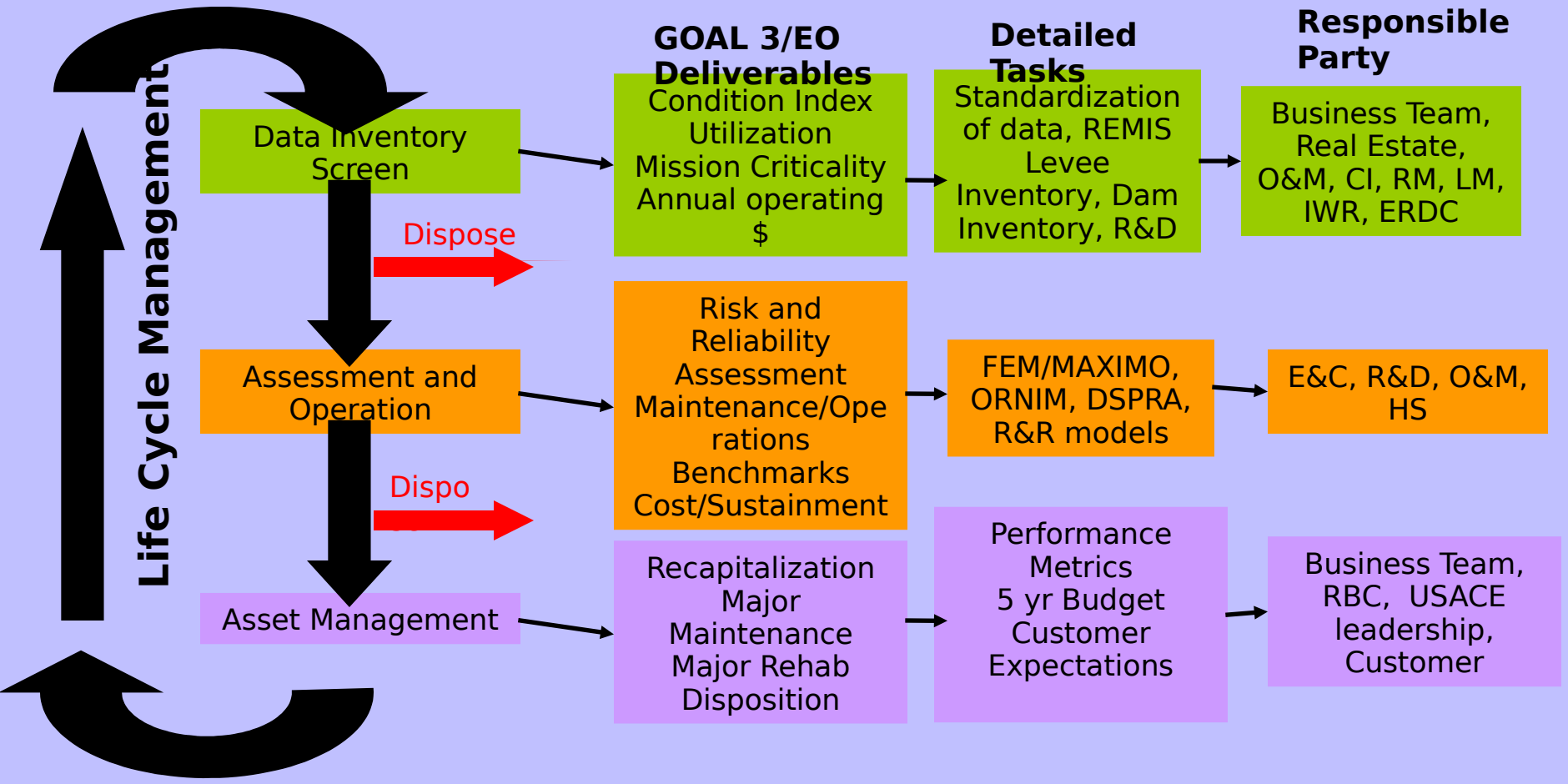
How does it work?



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Condition Assessment

- Condition Index: snapshot vs. risk-based
- Buying Down Consequences (risk) - Buying up Service (reliability)
- Not a one-size fits all
  - Component to system (miter gate to Ohio River)
  - simple to complex (screening to monte-carlo)
  - Business line (drivers/consequences)
  - Functional purpose (planning, engineering, O&M)

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Frequency of inspection in years

Consequence of Failure Grade		Condition Grade: V Good A	Good B	Acceptable C	Poor D	Bad E
	Low 1	20	20	10	10	5
	2	20	20	10	10	5
	Medium 3	20	20	10	5	5
	4	10	10	10	5	2
	High 5	10	10	10	5	2

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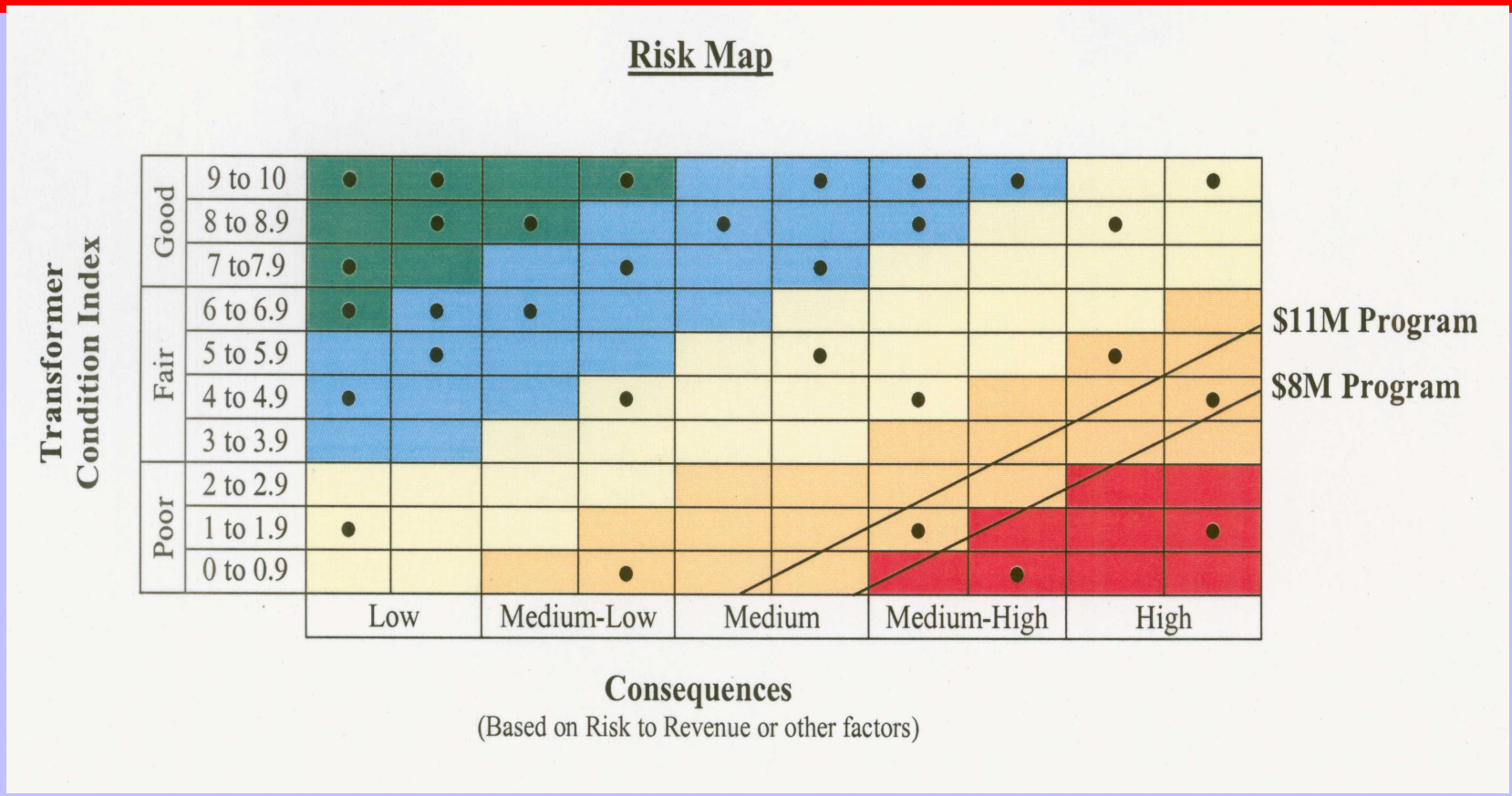
Example: Influence Diagram (Risk Map) for a Population of Transformers



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Challenges

- The inventory (standardization of terms, definition of asset)
- The metrics (constructed level to system)
- DoD requirements
- Condition assessment
- Integration of programs
- Integration of business lines
- Expectations (users, stakeholders, OMB, Congress, etc.)
- Resources

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The Way Ahead

Short Term

- Disposition plan
- Inventory revisions/ Data scrub
  - Assets vs Records (business line)
  - Complete data gap for 5-25k
  - Align plan with DOD requirements
- Risk and Reliability Workshop (August 15-17)
- Program Integration (Gant Chart / Track progress)
- Permanent HQ structure for AM

Long Range

- Roadmap for AM
- 3-yr time- EO 13327
- 5 yr development plan – Goal 3c
- Sustainable Infrastructure

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Life Cycle Management

The Goals:

- **Standardization of practice**
- **5 yr perspective**
- **Improved customer satisfaction**
- **Sustainable comprehensive approach**
- **Defensible budget**
- **Direct link between investment decision and level of service (performance)**
- **Disposition- right sizing**

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Questions?

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